CLAIMS

1. A work pad for polishing a substrate in the presence of a slurry comprising abrasive particles and a dispersive agent, comprising:

a working structure having a work surface and a backing surface;

the working structure comprising a two-component system, a first component comprising a soluble component, a second component comprising a polymer matrix component, the soluble component distributed throughout at least an upper portion of the working structure; and

the soluble component comprising organic particles soluble in the slurry to form a void structure in the work surface.

2. The work pad of claim 1, wherein the soluble particles are soluble in the dispersive agent of the slurry.

3. The polishing pad of claim 1, wherein the soluble particles comprise polysaccharides, derivatives of polysaccharides, or copolymers of polysaccharides.

4. The polishing pad of claim 1, wherein the soluble particles comprise polyvinyl alcohol, derivatives of polyvinyl alcohol, or copolymers of polyvinyl alcohol.

5. The polishing pad of claim 1, wherein the soluble particles comprise polyacrylic acid, derivatives of polyacrylic acid, or copolymers of polyacrylic acid.

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6. The polishing pad of claim 1, wherein the soluble particles comprise gums, derivatives of gums, or copolymers of gums.

7. The polishing pad of claim 1, wherein the soluble particles comprise maleic acid, derivatives of maleic acid, or copolymers of maleic acid.

8. The polishing pad of claim 1, wherein the soluble particles comprise compressible particles.

9. The work pad of claim 1, wherein the slurry is an aqueous slurry and the soluble particles are soluble in water.

10. The work pad of claim 1, wherein the soluble component provides a solid structure in the interior of the working structure.

11. The work pad of claim 1, wherein the soluble particles have a diameter selected to allow mobility to particles of the abrasive within the void structure.

12. The work pad of claim 1, wherein the soluble particles dissolve at a rate greater than a rate of wearing down of the matrix component during conditioning.

13. The work pad of claim 1, wherein the polymer matrix component is made of a polymer having sufficient rigidity to support the soluble component.

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14. The work pad of claim 1, wherein the polymer matrix component provides a non-compliant continuum in the interior of the working structure.

15. The work pad of claim 1, wherein the polymer matrix component comprises a polyurethane.

16. The work pad of claim 1, wherein the polymer matrix component comprises a polyacrylate.

17. The work pad of claim 1, wherein the polymer matrix component comprises a polystyrene.

18. The work pad of claim 1, wherein the polymer matrix component comprises a polyimide.

19. The work pad of claim 1, wherein the polymer matrix component comprises a polyamide.

20. The work pad of claim 1, wherein the polymer matrix component comprises a polycarbonate.

21. The work pad of claim 1, wherein the polymer matrix component comprises an epoxy.

22. The work pad of claim 1, wherein the working structure has a ratio of soluble component to matrix component of 10%/90% to 90%/10% by volume.

23. The work pad of claim 1, wherein the working structure has a thickness ranging from 0.005 inch to 0.150 inch.

24. The work pad of claim 1, wherein the working structure further includes a surfactant or a remover.

25. The work pad of claim 24, wherein the surfactant or remover is incorporated within the particles of the soluble component.

26. The work pad of claim 24, wherein the surfactant or remover is topographically coated onto the particles of the soluble component.

27. The work pad of claim 1, further comprising a backing structure comprising an adhesive layer fixed to the back surface of the working structure.

28. The work pad of claim 27, wherein the backing structure further comprises two layers of adhesive with a compressible structural layer therebetween.

29. A process of polishing a substrate using a work pad, comprising:

providing a work pad comprising:

a working structure having a work surface and a backing surface;

the working structure comprising a two-component system, a first component comprising a soluble component, a second component comprising a polymer matrix component, the soluble component distributed throughout at least an upper portion of the working structure; and

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the soluble component comprising organic particles soluble in the slurry to form a void structure in the work surface;

providing a substrate to be polished;

providing the slurry comprising abrasive particles and a dispersive agent; and

polishing the substrate with the slurry using the work pad.

30. The work pad of claim 29, wherein the soluble particles are soluble in the dispersive agent of the slurry.

31. The polishing pad of claim 29, wherein the soluble particles comprise polysaccharides, derivatives of polysaccharides, or copolymers of polysaccharides.

32. The polishing pad of claim 29 wherein the soluble particles comprise polyvinyl alcohol, derivatives of polyvinyl alcohol, or copolymers of polyvinyl alcohol.

33. The polishing pad of claim 29 wherein the soluble particles comprise polyacrylic acid, derivatives of polyacrylic acid, or copolymers of polyacrylic acid.

34. The polishing pad of claim 29 wherein the soluble particles comprise gums, derivatives of gums, or copolymers of gums.

35. The polishing pad of claim 29 wherein the soluble particles comprise maleic acid, derivatives of maleic acid, or copolymers of maleic acid.

36. The polishing pad of claim 29, wherein the soluble particles comprise compressible particles.

37. The work pad of claim 29, wherein the slurry is an aqueous slurry and the soluble particles are soluble in water.

38. The process of claim 29, wherein the substrate comprises a semiconductor wafer.

39. The process of claim 29, wherein the substrate comprises metal.

40. The process of claim 29, wherein the substrate comprises ceramic.

41. The process of claim 29, wherein the substrate comprises glass.

42. The process of claim 29, wherein the substrate comprises a hard disk.